

TABLE 1

Observations	Habit	Leaves	Flowers	Fruits	Seed
Literature	Herb/Undershrub	Cuneate, obovate	Solitary 3-5 cm long		Brown, truncate
Field	Woody herb	Cuneate, trifoliate petiole winged	Not seen	3 valved 1-1.2 cm in diameter	Brown, truncate
Herbarium	Woody herb	Cuneate, trifoliate petiole winged	Solitary 2-3 cm long	3-valved 0.8-1 cm in diameter	Brown truncate
Nursery	Woody herb 20-30 cm high	Cuneate, trifoliate petiole winged leaflets obtusely lobed, terminal leaflets longer than lateral	2-3 axillary yellowish- white, 0.5-0.6 cm long, anthers orange, forming tube, stigma greenish white	Tri-cornered 0-8-1 cm in length	Brown 0-4-0.6 cm long, truncate at both ends

Flowering fruiting: October to December

Naregamia alata flowers is 3-5 cm. But the flower size in the nursery specimens differs from this appreciably. Materials from herbaria at the Botanical Survey of India Western Circle, Pune, Agharkar Research Institute, Pune, and National Botanical Research Institute, Lucknow were studied. Observations on exomorphic characters

were noted and are given in the table above.

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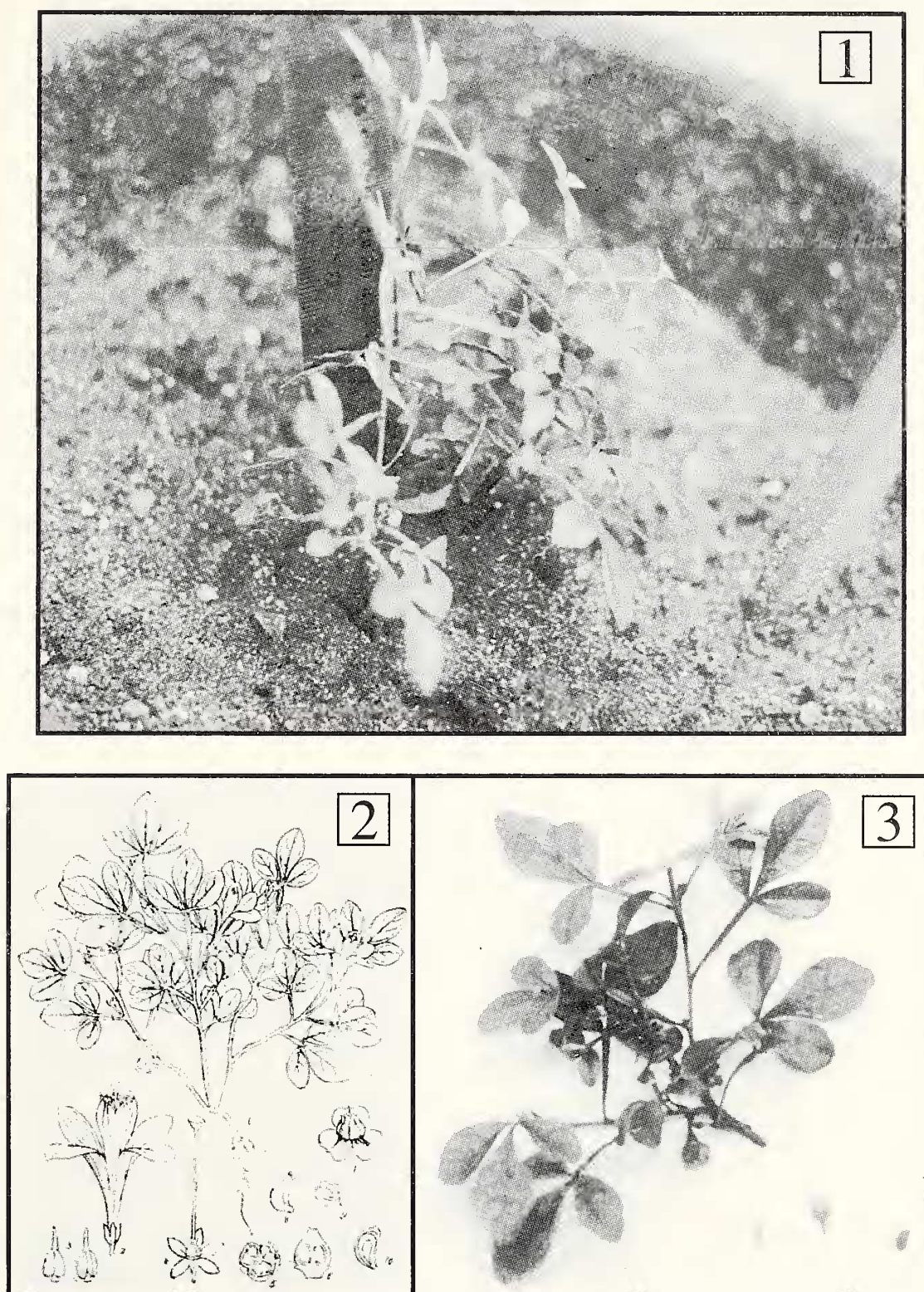
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34. *DESMODIUM* DESV. (FABOIDEAE) IN EASTERN GHATS, INDIA: A SYSTEMATIC SURVEY

(With two text-figures)

The botany of the Eastern Ghats has not been adequately studied and no detailed Flora is available so far. The flora of Eastern Ghats of Orissa is covered by the work of Haines (1921), while Gamble and Fischer (1915-1935) reported on Andhra Pradesh and Tamil Nadu in his FLORA OF PRESIDENCY OF MADRAS. Recently Saxena and

Brahmam (1994), Ellis (1987), Subba Rao (1977), Pullaiah and Chennaiah (1997), Matthew (1993) and others have contributed to our knowledge of the flora in some selected regions of the Eastern Ghats. Mani (1974), Nayar *et al.* (1984) and Raju *et al.* (1987) reported on the vegetation and phytogeography, endemic and rare



1. *Naregamia alata* growing at ARI nursery; 2. Line drawing of *Naregamia alata* from medicinal plants, Kirtikar and Basu, 1933. Lalit Mohan Basu, Allahabad;
3. Twig from plant growing in nursery showing flower, fruit and seed character.

plants and potentially important plants of Eastern Ghats.

STUDY AREA: The Eastern Ghats are located between $11^{\circ} 30'$ to 22° N lat. and $76^{\circ} 56'$ E to $86^{\circ} 30'$ E long. They extend in a northeast, southwest strike in the Indian peninsula, covering an area of about 75,000 km², from the Mahanadi basin to the north, to the Nilgiri hills at the

southern end. Eastern Ghats are thus spread through the States of Orissa, Andhra Pradesh and Tamil Nadu. They are divided into the northern Eastern Ghats and southern Eastern Ghats and irrigated by the rivers Mahanadi, Godavari and Krishna. The region has tropical monsoon climate, receiving rainfall from both southwest monsoon and northeast monsoon.



Fig. 1: Leaves and Pods of *Desmodium* spp.: A. *Desmodium triquetrum*; B. *D. laxiflorum*; C. *D. motorium*; D. *D. caudatum*; E. *D. pulchellum*; F. *D. heterocarpon*; G. *D. alysicarpoides*; H. *D. triangulare*; I. *D. pryonii*; J. *D. dichotomum*; K. *D. velutinum*; L. *D. triflorum*; M. *D. biarticulatum*; N. *D. gangeticum*; O. *D. heterophyllum*; P. *D. benthamii*.

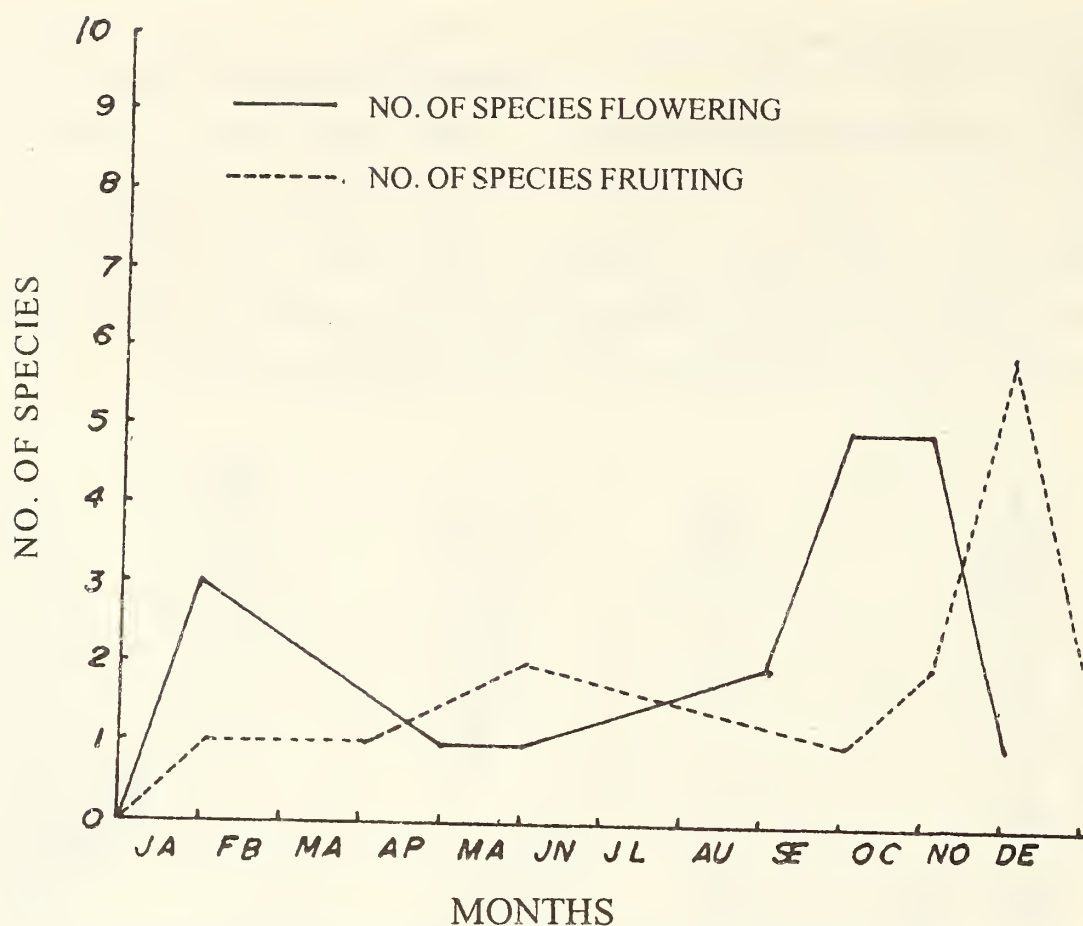


Fig. 2: Phenology of *Desmodium* spp. in Eastern Ghats.

Periodical collections were made during 1994-1997 throughout the Eastern Ghats. For the present study, the Eastern Ghats have been divided into eight regions representing different types of habitats and vegetation. The material has been identified after scrutiny at the herbaria of Botanical Survey of India (BSI) both at CAL and MH.

The genus *Desmodium* (Fabaceae) is mainly of tropical and sub-tropical distribution (Willis 1973) and comprises of 450 species, of which nearly 47 species, 12 sub-species and 8 varieties are found in India (Sanjappa, 1991). Some species of the genus are rather scarcely represented. In the Eastern Ghats, *Desmodium* is represented by 18 species which is the third largest genus after *Crotalaria* (49 species) and *Indigofera* (25 species).

General features of the genus: These are prostrate herbs to shrubs, leaves simple and trifoliate (Fig. 1). Flowers in terminal or axillary racemes, sometimes in axillary umbels. Calyx tube short, campanulate or turbinate, corolla exserted. Stamens diadelphous, sometimes monadelphous. Pods consisting of 2-

9, 1-seeded articles which are usually indehiscent and easily separating, less often dehiscent at one suture. Some compressed, reniform and estrophiolate.

Phenologically, all *Desmodium* species are annuals. Out of 18 species, 3 species i.e., *D. ferrugineum*, *D. repandum* and *D. triflorum* bear fruit throughout the year. A month-wise analysis of the data has been given in Fig. 2. The maximum number of species flower in September and October (5 species each month). The maximum number of species (6 species) fruit in November.

Table 1 shows the distribution of various *Desmodium* spp. collected from eight different regions of the Eastern Ghats. Out of 18 species, 5 are restricted in their distribution i.e. *Desmodium caudatum* is rare in Paderu, Vishakhapatnam, Andhra Pradesh; *D. ferrugineum* and *D. repandum* are common in Shevaroy and Kolli hills; *D. pryonii* is rare in Udayagiri of Seshachalam hill of Nellore dist., and *D. biarticulatum* is occasional in Araku valley and Seshachalam hill ranges.

MISCELLANEOUS NOTES

TABLE 1
DISTRIBUTION OF *DESMODIUM* SPECIES IN VARIOUS REGIONS OF EASTERN GHATS

Species	North E.G.			South E.G.				Frequency
	I	II	III	IV	V	VI	VII	
<i>Desmodium alysicarpoides</i> Van Meeuwen	+	+	+	-	-	-	+	Occasional
<i>D. benthamii</i> Balakr.	+	+	+	-	-	-	-	Rare
<i>D. biarticulatum</i> (L.) F.V. Muell	-	-	+	-	+	-	-	Occasional
<i>D. caudatum</i> (Thumb.) DC.	-	-	+	-	-	-	-	Rare
<i>D. dichotomum</i> (Wild.) DC.	+	+	-	+	-	+	*	Occasional
<i>D. ferrugineum</i> Wall.	-	-	-	-	-	+	+	Common
<i>D. gangeticum</i> (L.) DC.	+	+	+	+	*	+	*	Common
<i>D. heterocarpon</i> (L.) DC.	+	+	+	+	*	+	*	Common
<i>D. heterophyllum</i> (Wild.) DC.	+	-	+	+	-	-	+	Rare
<i>D. laxiflorum</i> DC.	+	+	+	*	+	+	+	Common
<i>D. motorium</i> (Houtt.)	*	+	+	+	*	-	-	Occasional
<i>D. pryonii</i> DC.	-	-	-	-	+	-	-	Rare
<i>D. pulchellum</i> (L.) Benth.	+	+	+	*	+	-	+	Common
<i>D. repandum</i> (Vahl) DC.	-	-	-	-	-	*	*	Common
<i>D. triangulare</i> (Retz.) Merr.	+	+	+	+	+	+	-	Occasional
<i>D. triflorum</i> (L.) DC.	*	*	*	*	*	*	*	Common
<i>D. triquetrum</i> (L.) DC.	+	+	+	+	-	-	-	Occasional
<i>D. velutinum</i> (Wild.) DC.	+	+	+	+	+	*	+	Common

SYMBOLS USED: I) Koraput range; II) Mahendragiri; III) Araku valley & Madgol hills; IV) Nallamalais; V) Seshachalam hills; VI) Shevaroy hills; VII) Kolli hills; VIII) Javadi hill *) Abundant; +) Present; -) Absent;

Desmondium benthamii is restricted to northern Eastern Ghats. *Desmodium gangeticum*, *D. heterocarpon*, *D. laxiflorum*, *D. triflorum*, *D. pulchellum* and *D. velutinum* are common throughout the Eastern Ghats. *D. alysicarpoides*, *D. dichotomum*, *D. heterophyllum*, *D. motorium*, *D. triangulare* and *D. triquetrum* are occasional in their distribution in different regions.

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35. *EUPATORIUM ADENOPHORUM* SPRENG. — A NEW RECORD FOR MADHYA PRADESH

The genus *Eupatorium* L. with about 400 species is mostly found in Central and South America, Asia and Africa. Hooker (1882) has reported only 2 species *E. glandulosum* H.B.K. and *E. reeversii* Wall. while Rao and Rao (1980) have given a detailed account of 12 species from the northeastern region of India.

This study is based on survey and collection by the authors and consultation of herbarium of Botanical Survey of India, Central Circle, Allahabad. This species has not been reported from central India to date (Verma *et al.* 1993). The authors, while conducting a survey of medicinal plants growing in Torenga forest, Raipur dist., Madhya Pradesh in 1991 and 1992, came across *E. adenophorum* Spreng, growing wild.

Eupatorium adenophorum Spreng., Syst. 3:420, 1826; Rao & Rao Proc. Indian Nat. Sci. Acad. B. 46. 4: 587-592, 1980.

Straggling perennial undershrubs. Stem densely covered with stalked glands. Leaves opposite, broadly elliptic or rhomboid, angular

sharply pointed, serrate above, base cuneate. Flower heads clustered, white, pedicelled, 40-60 flowered; involucre bracts 20 in two rows, lanceolate acuminate, striate, glandular-ciliate. Corolla tube white, abruptly dilated. Achenes black, glabrous, crowned by pappus of 10-20, whitish hairs.

Fl. & Fr.: February - May.

Specimen examined: Torenga Forest, Raipur dist., M.P., Field Nos. 6708, 7148.

Distribution: Native to Mexico, naturalized in Northeastern India, Tamil Nadu, Uttar Pradesh and Kerala.

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